# ACTIVITY : PNEUMATIC & HYDRAULIC CYLINDER

# MAINTENANCE

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* Objective : - Safe and effective maintenance of Pne/Hyd cylinder for Optimum Performance.
* Scope : - Hydraulic & pneumatic equipment’s in the plant.
* Ref. : - VL/IMS/PID1/MECH/WI/93,SP 44,
* Responsibility : - Engineer In charge and workmen on the job

# PPE –s to be used:

 Helmet, Safety shoes, hand gloves and safety goggle. (Depending upon type of job)

# Aspect – impact:

Oil Spillage Land contamination

Oil traced waste Land contamination & Resource Depletion generation

Scrap generation Resource Depletion

# Hazards identified:

**Mechanical hazard** - Trapping of body parts in between cylinder parts, Impact, fall of material while cylinder is lifted.

# Physical Hazard - Pressure

**Human Behaviour:** Horseplay, working under the influence of alcohol, Job done by passing work instruction, Non usage of PPE

# Chemical Hazard: Fire

1. Open the cylinder plug slowly to release the pressure in the cylinder to overhaul.
2. If the cylinder is hydraulic, drain out the oil from the drain plug follow procedure VL/IMS/PID1/MECH/WI/93 for oil handling.
3. Remove the bolts of both the side cover.
4. Keep the cylinder in vertical position, lock with the supporting structure for top charging & mud gun cylinders
5. Lift the piston and piston rod with chain pulley block from the top end. Never attempt to remove the piston /rod by pressurizing the cylinder as it may come out with high speed.
6. Inspect the piston & cylinder bore for any scoring in the inner race.
7. Change the seal kit of the piston.
8. Reassemble the cylinder & insert the piston and rod with the help of chain pulley block.
9. Tight all the cover bolts to ensure no leakage.
10. Check the breather plug for tightness and leakage.
11. For hydraulic cylinder, fill clean oil in the cylinder.
12. Pressurize the cylinder slowly using the power pack for hydraulic cylinder or by direct air line for pneumatic cylinder.
13. Never attempt to test the cylinder with higher pressure than rating.
14. Keep the cylinder far away to ensure nobody is close to the pressurized cylinder.
15. Check for any leakage in the cylinder at specified pressure.
16. Lower bell cylinder need to be tested by plugging the piston rod side plug after filling oil. Load the old lower bell with a cylinder and 2 T sling, Keep it in hang position and monitor for 48 hrs for any change in the bell position. The bell should not come down at all.
17. Once the testing is completed, tag the cylinder as overhauled and keep at proper allotted place in BF1 glendon.
18. Check the threading of the cylinder piston rod & fork for proper tight fit. Lock with locating pins to avoid rotation of piston rod.
19. For replacing the cylinder at the site ensure the release of pressure in line of the cylinder and ensure that hose of the depressurized end is removed first.
20. Lower the cylinder load before removing the hose.
21. Remove all the hose connection of the cylinder for hyd. cylinder plug the both inlet outlet connectors to ensure no entry of the foreign material.
22. Replace the cylinder with overhauled one.
23. Give the hose connection to the hose.
24. Take trial of the cylinder, check for any leakage in the system.
25. After hydro motor overhauling check the drain leakage rate.

**Amendement Record**

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| **Date** | **Manual Section Ref. & Para** | **Brief details of Revision** | **New Rev.** |
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| **Prepared By:**  Area Engineer | **Reviewed & Issued By:**  Management Representative | **Approved By:**  Mechanical Head |
| **Signature** | **Signature:** | **Signature:** |
| **Review Date: 12.12.22** | **Review Date: 12.12.22** | **Review Date: 12.12.22** |